

Los Angeles Regional Water Quality Control Board

September 21, 2018

Mr. Sandeep Sharma
Facilities Manager
Shell Oil Products US
20945 South Wilmington Avenue
Carson, CA 90810

Dear Mr. Sharma:

**APPROVAL OF THE MONITORING PLAN AND QUALITY ASSURANCE PROJECT PLAN –
EQUILON ENTERPRISES LLC DBA SHELL OIL PRODUCTS US, SHELL OIL PRODUCTS US
MORMON ISLAND TERMINAL, WILMINGTON, CALIFORNIA (NPDES NO. CA0064637; CI -
10297)**

On March 28, 2018, the Los Angeles Regional Water Quality Control Board (Regional Water Board) received a draft Monitoring Plan and Quality Assurance Project Plan (QAPP) (collectively, the Draft Plans) from Equilon Enterprises LLC dba Shell Oil Products US (the Discharger). The Draft Plans were submitted per requirements included in the waste discharge requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit (Order No. R4-2017-0039) for the subject Facility. Section VII.C.2.c of Order No. R4-2017-0039 required the Discharger to implement a Compliance Monitoring Program at the Los Angeles Inner Harbor in accordance with the *Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants Total Maximum Daily Loads* (Harbor Toxics TMDL). Regional Water Board staff reviewed and provided comments on the Draft Plans on May 4, 2018. On June 22, 2018, the Discharger submitted the revised Draft Plans, which incorporated the Regional Water Board's comments. On June 26, 2018, the Regional Water Board released the revised Draft Plans for a 30-day public comment period; the Draft Plans were distributed through electronic mail to interested parties and posted on the Regional Water Board website.

One set of comments from Heal the Bay was received on July 26, 2018. Regional Water Board staff considered the comments received, and made recommendations to the Discharger addressing these comments. The Discharger submitted the revised Draft Plans on September 12, 2018, incorporating staff recommendations. As such, the Regional Water Board Executive Officer is hereby approving the revised Draft Plans as submitted by the Discharger on September 12, 2018. In accordance with section VII.C.2.c of Order No. R4-2017-0039, please implement the approved revised Draft Plans (hereinafter, the Final Plans) within six months from the issuance of this approval.

The Discharger shall submit the annual monitoring reports to the Regional Water Board in accordance with the specified reporting method and schedule as included in the Final Plans. Additionally, the Regional Water Board encourages the submittal of receiving water data onto the California Environmental Data Exchange Network (CEDEN) to promote a centralized location to

Mr. Sandeep Sharma
Equilon Enterprises LLC dba Shell Oil Products US
Shell Oil Products US Mormon Island Terminal

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September 21, 2018

find and share information on California's waterbodies. Therefore, please also submit the monitoring data in accordance with the requirements specified for CEDEN, when feasible.

If you have any questions, please contact Ching Yin To at Ching-Yin.To@waterboards.ca.gov or at (213) 576-6696.

Sincerely,


for Deborah J. Smith
Executive Officer

cc: **(Via Email Only)**

Mr. Rick Roper, Shell Oil Products US
Mr. Elliot Ripley, Shell Oil Products US
Ms. Ana Horn, WGR Southwest, Inc.
Ms. Chelsea Dryer, WGR Southwest, Inc.
Ms. Annelisa Ehret Moe, Heal the Bay
Ms. Mary Luna, Heal the Bay



Shell Oil Products US

167 Berth (167-169)
Wilmington, CA 90744

September 6, 2018

California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

NPDES Permit No. CA0064637
Compliance File No. CI-10297

RESPONSE TO THE LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD COMMENTS REGARDING THE DRAFT MONITORING AND REPORTING PLAN AND QUALITY ASSURANCE PROJECT PLAN - EQUILON ENTERPRISES LLC DBA SHELL OIL PRODUCTS US, SHELL OIL PRODUCTS US MORMON ISLAND TERMINAL (NPDES NO. CA0064637, CI – 10297)

Dear Ms. Ching-Yin:

Shell Oil Products US, Mormon Island Marine Facility has reviewed the comments provided on August 21, 2018 by the Los Angeles Regional Water Quality Control Board (herein, Regional Board) regarding the facility's Monitoring and Reporting Plan (MRP) and Quality Assurance Project Plan (QAPP). Please see below for the facility's response to the Regional Board's comments:

1. QAPP Section 11.1 – As requested, a sample depth for TSS mid water samples has been specified for consistency during future sampling events.
2. QAPP Section 11.3 – As requested, the MRP was updated to specify the type of fish tissue to be analyzed and clarification has been provided regarding the guidance documents to be referenced for preparation methods of the collected fish samples.
3. Field Data Sheet – The field data sheet has been updated to include areas to record the time samples were placed on ice, the type of preservation used, equipment cleaning performed, and field staff confirmation of the information provided on the field data sheet.

Please find attached the facility's MRP and QAPP Final Plans revised in accordance with the changes noted above for review and approval by the Regional Water Board Executive Officer. If you have any questions or need additional information, please feel free to contact Elliott Ripley at (805) 764-6004.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

Ms. Ching-Yin
Regional Water Quality Control Board
Mormon Island Response to MRP and QAPP Comments
NPDES No. CA0064637

Sincerely,

A handwritten signature in black ink, appearing to read 'Sandeep Sharma', with a stylized flourish at the end.

Sandeep Sharma
Facilities Manager South
Shell Oil Products US

cc: Rick Roper, SOPUS

HARBOR TOXICS TMDL MONITORING AND REPORTING PLAN (MRP)

Prepared for:

Shell Oil Products US, Mormon Island Terminal
Berth 167 (167-169)
Wilmington, CA 90744

Prepared by:

WGR Southwest, Inc.
11021 Winners Circle, Suite 101
Los Alamitos, CA 90720

Date:

September 5, 2018

SHELL OIL PRODUCTS US – MORMON ISLAND TERMINAL

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SHELL OIL PRODUCTS US – MORMON ISLAND TERMINAL

MRP REVISION HISTORY

Revision No.	Date	Revised By	Reason for Revision	Sections Revised
1.0	3/19/2018	Ana Horn, QISP WGR Southwest, Inc.	Initial DRAFT preparation to address Harbor Toxics TMDL Monitoring Plan provisions as required by Order No. R4-2017-0039	All
2.0	5/21/2018	Ana Horn, QISP WGR Southwest, Inc	Revised DRAFT plan in accordance with Regional Board Comments	Section 2.1, 4.0, 4.1, 4.3, 6.0 and Figure 3

SHELL OIL PRODUCTS US – MORMON ISLAND TERMINAL

MRP DISTRIBUTION

1. Mormon Island Terminal
Shell Oil Products US
Berth 168
Wilmington, CA 90744
2. Western Region Central Environmental File
Carson Terminal
Shell Oil Products US
20945 S. Wilmington Avenue
Carson, CA 90810
3. Carson Terminal Operations Building
Shell Oil Products US
20945 S. Wilmington Ave.
Carson, CA 90810
4. WGR Southwest, Inc.
Environmental Consultant
11021 Winners Circle #101
Los Alamitos, CA 90621

1.0 Introduction

This document constitutes the proposed Harbor Toxics Total Maximum Daily Load (TMDL) Water Column, Sediment and Fish Tissue Monitoring and Reporting Plan (MRP) for the Equilon Enterprises LLC dba Shell Oil Products US, Mormon Island Terminal (herein, terminal). The terminal is located at the Los Angeles Harbor, Slip No. 1, Berth 167-169 in the City of Wilmington, California. The MRP was developed to comply with the Harbor Toxics TMDL Monitoring Program as required in the National Pollutant Discharge Elimination System (NPDES) Permit No. CA0064637, amended by Order No. R4-2017-0039.

The principal objectives of this MRP are to:

- Assess the chemical, physical and biological impacts of discharges from Mormon Island Terminal to the receiving water: the Los Angeles Inner Harbor
- Characterize pollutant loads in terminal discharges
- Identify and evaluate pollutant sources
- Measure and improve the effectiveness of pollutant controls

This MRP follows the “*TMDL Element – Monitoring Plan*” provisions in Attachment A to Resolution No. R11-008. Applicable water quality objectives for the TMDL are narrative objectives for Chemical Constituents, Pesticides, and Toxicity in the Basin Plan and the numeric water quality criteria promulgated in 40 CFR Section 131.38 (the California Toxics Rule (CTR)). In addition, sediment condition objectives were determined using the State Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality (SQO-Part 1) and the sediment quality guidelines.

This proposed compliance TMDL monitoring program is required to be submitted to the Regional Water Board Executive Office by April 1, 2018. All monitoring as specified in this MRP shall be triggered by the first discharge from the terminal to the permitted NPDES outfall. *If no discharge occurs, implementation of this monitoring and reporting plan is not required* (See Section 4.0).

2.0 Terminal Information

Mormon Island Terminal is located in the Port of Los Angeles. The terminal receives shipments of gasoline, diesel, jet fuel and ethanol from vessels of domestic and international origin. Unloaded product is transferred directly from the vessels, through pipelines, offsite to the Shell Carson Terminal or onsite to storage tanks for temporary storage. Two steel containment pans and bermed loading stations are in place on the wooden berth to capture any spills or wastewater that may be generated from unloading operations. These containment measures have built in drainage systems that transfer spills or wastewater to contact water tanks M17 and M25 via pipelines.

The terminal has 12 aboveground storage tanks distributed within the terminal’s tank farms which include: the north and south tank farm, and the M10 tank farm. All process areas of the terminal including the tank farms, pump house, hazardous waste storage area, and aboveground piping manifolds and valve areas are contained by berm structures.

2.1 Terminal Drainage

Storm water captured within the bermed areas of the terminal is normally left for evaporation or percolation into the soil. When the bermed tank farms reach capacity, Terminal operators can manually open the valves within the bermed areas routing storm water to the API separator. The API separator is a gravity separation device used for the settling of particulates prior to discharging storm water offsite. Storm water from the roadway along the west and south side of the tank farm is pumped into the tank farm's bermed areas by installed automatic pumps.

Drainage from the terminal yard area, south of the main office, has four controlled valves in the normally locked closed position. The valves cause the impoundment of storm water in the area, which allows terminal personnel to visually observe the water. Storm water impounded in the yard is allowed to dissipate by evaporation and percolation. Storm water collected within the curbed manifold and valved areas of the facility is pumped to either Tank M-17 or Tank M-25. Storm water impounded within the hazardous waste storage area is visually inspected and if no contamination is detected the impounded storm water is also pumped to either Tank M-17 and Tank M-25. Collected water in Tank M-25 and Tank M-17 is sent to a treatment mobile unit.

Under normal operations, storm water routed to the API Separator is discharged to the City of Los Angeles Department of Public Works, Bureau of Sanitation (POTW) under Industrial Wastewater User No. IU0131121 Permit No. W-494537. Treated water from Tanks M-17 and Tank M-25 can be discharged to the sewer using the POTW discharge permit or may be hauled offsite to Shell Carson to be treated and discharged. Under emergency situations, storm water can be released into the Los Angeles Inner Harbor through the permitted NPDES Discharge Point 001 under NPDES No. CA0064637. Effluent samples are collected at Discharge Point 001 for the required parameters during active discharge. Additionally, during years of discharge the terminal monitors the receiving water at point RSW-001 for the specified constituents in the permit. The first discharge through the permitted NPDES outfall would trigger the implementation of the Harbor Toxics TMDL Monitoring Program as specified in this MRP.

3.0 MRP Implementation Team

The following table lists the terminal's MRP implementation team members along with their area(s) of responsibility. The implementation team is responsible for ensuring required monitoring and sampling are being performed as detailed in the MRP, as well as ensuring applicable deadlines are being met. The table below is subject to change due to personnel and responsibility.

Table 3.0 – MRP Implementation Team		
Name	Title	Responsibility
Sandeep Sharma	Facilities Manager	Certification of associated monitoring reports submitted to the LARWQCB.
Rick Roper	Terminal Manager	Overall Storm Water Program implementation at the Terminal. Approval of facility effluent discharges. Responsible for BMP implementation, employee training and spill response.
On - Call Terminal Operators	Terminal Operators	Operates storm water / tank farm isolation valves, controls the release of storm water, coordinates storm water related maintenance issues.
Elliott Ripley	Environmental Advisor	Provides technical assistance to the terminal personnel for storm water compliance issues, supports the terminal by evaluation analytical testing results, assists the terminal manager with discharge decisions, reviews prepared reports, plans and other related documentation
WGR Southwest Inc.	Environmental Consultant	Preparation of reports and plans, conducts annual evaluation and provides technical assistance to the terminal personnel for storm water compliance issues
Qualified Sampling Contractor	Sampling Supervisor / Technicians	Collects samples as required by the terminal's MRP, complete required field documentations, prepare samples for submittal to laboratory
Eurofins Laboratory	Contracted Laboratories	Analyze samples and provide detailed laboratory reports of results, and QA/QC data

3.1 Site Maps

Table 3.1 lists the figures incorporated as attachments depicting the facility's location, permitted storm water outfall and drainage, process water diagrams and the monitoring stations to be sampled under this MRP.

Table 3.1 – Site Maps		
Requirement	Map Name	Figure No.
At least one quarter mile vicinity around the facility, shows nearby bodies of water	TOPOGRAPHIC VICINITY MAP	<u>Figure 1</u>
Map shows terminal boundaries, location of the terminal outfall, catch basins, facility structures, paved / impervious areas, storm water drainage flow patterns, and oily water areas. Map also shows areas of industrial activity including product storage areas (drums and tanks), maintenance areas, and other industrial activity areas.	MORMON ISLAND TERMINAL STORM WATER OUTFALL & DRAIN MAP	<u>Figure 2</u>
Monitoring / Sampling Stations	MONITORING STATIONS	<u>Figure 3</u>

4.0 Monitoring and Reporting Plan

Under NPDES Permit No. CA0064637, Mormon Island Terminal is required to conduct Harbor Toxics TMDL water column, sediment and fish tissue monitoring in the Los Angeles and Long Beach Harbor Waters. Monitoring, as specified in this MRP, is only to be implemented when a discharge occurs to the permitted NPDES outfall. *If no discharge occurs, implementation of this monitoring and reporting plan is not required.* The terminal's permitted NPDES outfall is designated to be used for emergency purposes only. Storm water is preferentially routed to the POTW sewer connection.

If a single discharge occurs to the NPDES outfall, the first storm water discharge shall trigger the beginning of the monitoring year for the Harbor Toxics TMDL program. All monitoring as outlined in this MRP shall be implemented from the terminal's first discharge after the effective date of the permit order. Receiving water column sampling (including water samples and total suspended (TSS) samples) shall begin during or as soon as possible following the first effluent discharge event. Sediment and fish tissue monitoring must begin within the year of the first effluent discharge event. The monitoring year shall begin the day the first discharge from the terminal is released and shall conclude one year thereafter.

The Quality Assurance Project Plan (QAPP) supporting this MRP specifies the sample collection protocols, standard analytical procedures, quality assurance / quality control protocols for water, sediment and fish tissue monitoring. The QAPP includes Surface Water Ambient Monitoring Program (SWAMP) methods and procedures to be incorporated in the Harbor Toxics TMDL Monitoring Program. [Table 4.1](#) describes the stations to be monitored under this MRP, along with the sample media and applicable analytical parameters. Compliance with waste load and load allocations shall be addressed as part of the Annual Report submitted to the Los Angeles Regional Water Quality Control Board (LARWQCB).

The LARWQCB Executive Officer may reduce, increase or modify monitoring and reporting requirements, as necessary, based on the results of the TMDL monitoring program. Several of the constituents of concern have numeric targets that are lower than the readily available detection limits. As analytical methods and detection limits continue to improve and become more environmentally relevant, associated responsible parties may be requested by the Executive Officer to incorporate new method detection limits in the MRP and QAPP. Water column, sediment and fish tissue monitoring requirements are described in [Section 4.1](#), [Section 4.2](#), and [Section 4.3](#).

4.1 MRP Implementation Schedule

This MRP is required to be submitted to the LARWQCB within 12 months of the effective date of the permit order for public comment and the Regional Water Board approval. Shell Mormon Island Terminal shall initiate monitoring 6 months after the MRP and QAPP are approved by the LARWQCB Executive Officer, unless otherwise directed by the Executive Officer.

Implementation of this MRP, is as follows:

- If *no discharge occurs*, the MRP shall not be implemented.
- If a single discharge occurs to the NPDES outfall, all monitoring as outlined under this MRP shall be implemented from the first discharge from the terminal after the effective date of the permit order. Receiving water column sampling (including water samples and total suspended solids (TSS) samples) shall begin during or as soon as possible following the first effluent discharge event. Sediment and fish tissue monitoring must begin within the year of the first effluent discharge event.

Once implementations of the MRP is triggered, sufficient water samples shall be collected to analyze for the required constituents. Water column, total suspended solids (TSS) and sediment samples shall be collected at selected monitoring stations as specified in Attachment A to Resolution No. R11-008. Water column, sediment and fish tissue monitoring stations are described in Table 4.1 and depicted in Figure 3.

Table 4.1 – Monitoring Stations				
Water Body Name	Station ID	Station	Station Location	Sample Media and Parameters ¹
Los Angeles Inner Harbor	02	East Turning Basin	33 ° 45'45.55" N 118 15'19.82" W	Water Column / TSS: Flow, Temperature, Dissolved Oxygen, pH, Salinity, TSS, Copper, Lead, Zinc, PCBs, DDT
	03	Center of the POLA West Basin	33 ° 45'50.59" N 118 ° 16'28.47" W	
	05	Between Pier 300 and 400	33 ° 43'53.75" N 118 ° 15'13.83" W	
	04	Main Turning Basin North of Vincent Thomas Bridge	33 ° 45'02.77" N 118 ° 16'15.41" W	Water Column / TSS: Flow, Temperature, Dissolved Oxygen, pH, Salinity, TSS, Copper, Lead, Zinc, PCBs, DDT Sediment³: Sediment Chemistry, Sediment Toxicity, Benthic Community Effect
	06	Main Channel South of Port O' Call	33 ° 43'35.51" N 118 ° 16'17.97" W	
	07	Fish Tissue Sampling Station ²	33 ° 45'14.95" N 118 ° 16'07.77" W	Fish Tissue: Chlordane, Dieldrin Toxaphene, DDT and PCBs

1 – Sampling shall be designed to collect sufficient volumes of suspended solids to allow for analysis of the listed pollutants in the bulk sediment.

2 – Fish tissue sampling locations is subject to change depending on harbor conditions.

3 – Sediment bed samples shall only be collected at Station 04 and 06. Sediment chemistry samples shall be analyzed for the full chemical suite as included in Attachment A of the SQO-Part 1.

4.2 Water Column Monitoring

Water column monitoring shall be performed in the Los Angeles Inner Harbor at Stations 2 through 6 as listed in [Table 4.1](#). Water samples and TSS samples shall be collected during two wet weather events and one dry weather event each year. TSS samples shall be collected at several depths during wet weather events.

The first large storm event of the season, once MRP implementation has been triggered, shall be included as one of the wet weather monitoring events. The National Oceanic and Atmospheric Administration (NOAA) government website shall be used to predict and determine the magnitude of predicted storm events. Wet weather events shall be targeted 24 hours after a storm event occurs to allow runoff to reach the receiving water. Additionally, allowing a 24-hour period to pass before entering the Harbor waters will improve the likelihood of sampling in less dangerous conditions than those present at the start of the storm.

During water column sampling, sufficient volumes of suspended solids shall be collected to allow for analysis of the pollutants in the bulk sediment. Water and TSS samples shall be analyzed for lead, zinc, copper, DDT, and PCBs. In addition, general water chemistry including temperature, dissolved oxygen, pH, salinity, and receiving water flow shall be monitored during each sampling event using the appropriate instrumentation for measurement. All samples are to be submitted to a state certified laboratory for analysis with an accompanying chain of custody as specified in the supporting QAPP. [Table 4.2](#) summarizes the waste load allocations (WLAs) as included in the Harbor Toxics TMDL.

Table 4.2 – Receiving Water Column Concentration Based WLAs					
Constituents	Lead (ug/L)	Zinc (ug/L)	Copper (ug/L)	DDT (ug/L)	PCBs (ug/L)
Greater Harbor Waters	8.52	85.6	3.73	0.00059	0.00017

4.3 Sediment Monitoring

Sediment triad sampling shall be conducted every five years starting from the year of the first effluent discharge event and every five years subsequently at Station 04 and Station 06 only. Sediment triad sampling, as specified in the SQO - Part 1, consists of three lines of evidence (LOE) including: sediment chemistry (including the full suite of analytes listed in Attachment A of the SQO-Part 1), two toxicity tests and four benthic indices. See Section 4.3.1 – 4.3.4 for a description of the required LOEs.

In addition, sediment chemistry sampling shall be conducted in between the sediment triad sampling events every five years (ideally halfway between the five-year sampling period for the sediment triad sampling). The sediment chemistry samples shall be analyzed for the full chemical suite as included in Attachment A of the SQO-Part 1 to evaluate trends in general sediment quality constituents and listed constituents relative to sediment quality targets. Chemistry data without accompanying sediment triad data shall be used to assess sediment chemistry trends and shall not be used to determine compliance. Sediment triad sampling and sediment chemistry sampling shall only occur at Station 04 and Station 06, as outline in Table 4.1. If possible, the sediment quality objective evaluation as detailed in the SQO - Part 1, shall be performed every five years in coordination with the Biological Baseline and Bight regional monitoring programs¹.

If moderate sediment toxicity is observed, results shall be reported in the Annual Report and submitted to the LARWQCB. Further analysis and evaluation to determine the causes of toxicity and remedial actions shall be performed in accordance with the Executive Officer's approved monitoring plan. Refer to Appendix C for the marine sediment targets as specified in Attachment A to Resolution No. R11-008.

Sampling guidelines for assessing sediment composition and benthic community effects shall be performed in the Los Angeles Harbor following the guidelines specified in Section VII.E of the SQO Part 1.

Compliance with sediment TMDLs may be demonstrated via one of the following means:

- a. Final sediment allocations, as presented in Appendix C, are met
- b. The qualitative sediment condition of *unimpacted* or *likely unimpacted* via the interpretation and integration of Multiple Lines of Evidence (MLOE) as defined in the SQO-Part 1, are met.
- c. Sediment numeric targets are met in bed sediments over a 3-year averaging period.

Assessment of sediment quality shall consist of measuring and integrating data gathered from three lines of evidence (LOE) including sediment chemistry analysis, sediment toxicity and benthic community condition. Each LOE is described in the following sections.

¹ Biological Baseline and Bight regional monitoring programs are coordinated by the Southern California Coastal Water Research Project. Regional sediment quality monitoring occurs once every three years.

4.3.1 Sediment Chemistry LOE

Sediment chemistry measures the concentration of chemicals in surface sediments and is used to assess the potential risk posed to benthic organisms from toxic pollutants. Sediment chemistry analysis is only intended to evaluate overall exposure risk from chemical pollutants. Two indices are used to interpret the results: the California Logistic Regression Model (CA LRM) and the Chemical Score Index (CSI). Results obtained from both indices are subsequently used to produce a single score representing the chemistry LOE.

4.3.2 Sediment Toxicity LOE

Sediment toxicity measures the response of invertebrates exposed to surface sediment under controlled laboratory conditions. Toxicity results are used to assess pollutant related biological effects and exposure and provides a measurement of exposure to all pollutants present, including non-traditional or unmeasured chemicals.

The toxicity LOE requires a short-term survival test and a sublethal test. The results of each test are categorized into nontoxic, low toxicity, moderate toxicity or high toxicity and are assigned a corresponding score. The two test scores are integrated to produce a single score for the sediment toxicity LOE.

4.3.3 Benthic Community Condition LOE

Benthic community effects measure the species composition, abundance and diversity of sediment dwelling invertebrates inhabiting surface sediments. Benthic community condition is used to assess impacts on benthic fauna and is intended to only evaluate overall exposure risk from chemical pollutants. The benthic condition is assessed using the following indices:

- Benthic response index (BRI)
- Index of Biotic Integrity (IBI)
- Relative Benthic Index (RBI)
- River Invertebrate Prediction and Classification System (RIVPACS)

The indices are analyzed together to provide an overall score for the benthic community condition LOE.

4.3.4 Integration of Multiple LOE

Assessment as to whether the aquatic life sediment quality objective has been attained at a monitoring station is accomplished by the interpretation and integration of MLOE. Evaluating both the chemistry and toxicity LOE determines the potential for chemically mediated effects. Similarly, evaluating both the toxicity and benthic community LOEs determines the severity of biological effects. Each LOE combination allows for the classification of each monitoring station into the following categories: unimpacted, likely impacted, possibly impacted, likely impacted, clearly impacted, or inconclusive.

4.4 Fish Tissue Monitoring

Fish tissue samples shall be collected every two years in the Los Angeles Harbor and analyzed for chlordane, dieldrin, toxaphene, DDT and PCBs. Three species shall be collected, including a white croaker fish, a sport fish and a prey fish. Target species in the Los Angeles Harbor shall be selected based on residency and local abundance.

The fish shall be collected using specialized contractors with the appropriate equipment to capture and prepare the fish tissue for analysis. Sampling locations are subject to change depending on field conditions during sampling events. Fish tissue samples shall be collected and submitted for analysis to Eurofins Laboratory. See QAPP [Section 11.3](#) for a detailed description of fish species selection and procedures.

The fish tissue targets and the associated sediment targets for each pollutant, as specified in the Harbor Toxics TMDL, are summarized in [Table 4.4](#). Fish tissue targets were determined from Fish Contaminant Goals and Advisory Levels for Common Contaminants in California Sport Fish: Chlordane, DDTs, Dieldrin, Methylmercury, PCBs, selenium and Toxaphene developed by the Office of Environmental Health Hazard Assessment OEHHA (2008).²

Pollutant	Fish Tissue Targets (ug/kg wet)	Associated Sediment Target (ug/kg dry)
Chlordane	5.6	1.3
Dieldrin	0.46	n/a
Toxaphene	6.1	0.1
DDT	21	1.9
PCBs	3.6	3.2

Compliance with bio-accumulative TMDLs in fish tissue may be demonstrated via any of the following:

- Fish tissue targets are met in species residents to the TMDL waterbodies.
- Final sediment allocations based on sediment-fish tissue linkage in the Harbor Toxics TMDL are met.
- Sediment numeric targets to protect fish tissue are met in bed sediments over a 3-year averaging period.

² The Office of Environmental Health Hazard Assessment OEHHA (2008) assists agencies in developing fish tissue-based criteria for pollution mitigation or elimination and to protect humans from consumption of contaminated fish.

- d. Demonstrate that the sediment quality condition protective of fish tissue is achieved per the Statewide Enclosed Bays and Estuaries Plan.

5.0 Sampling Procedures

Sample collection protocols, standard analytical procedures, quality assurance / quality control protocols for water and sediment monitoring are specified in the QAPP supporting this MRP.

6.0 Reporting Requirements

An annual monitoring report shall be submitted to the LARWQCB indicating compliance with waste load and/or load allocations. The annual monitoring report shall include the following:

- A description of monitoring activities conducted for the monitoring year;
- A summary of water, sediment and tissue analytical results; and
- A summary of any deviations from the proposed sampling program and associated quality assurance / quality control issues and any associated action / response activities.

The annual monitoring report shall be submitted to the LARWQCB starting 15 months after monitoring is initiated and annually thereafter. All receiving water monitoring data shall also be submitted in accordance with the California Environmental Data Exchange Network (CEDEN). The terminal shall submit all receiving water monitoring data in accordance with CEDEN, when feasible. It is important to note that implementation of the Harbor Toxics TMDL monitoring program is triggered by the first storm water discharge from the terminal through the permitted NPDES outfall into the Los Angeles Inner Harbor. The monitoring year shall begin the day the first discharge from the terminal is released and shall conclude one year thereafter.

If no discharge occurs implementation of the TMDL monitoring program is not required and, as such, a no discharge report shall be submitted in the annual report submitted to the LARWQCB.

HARBOR TOXICS TMDL QUALITY ASSURANCE PROJECT PLAN (QAPP)

Prepared for:

Shell Oil Products US, Mormon Island Terminal
Berth 167 (167-169)
Wilmington, CA 90744

Prepared by:

WGR Southwest, Inc.
11021 Winners Circle, Suite 101
Los Alamitos, CA 90720

Date:

March 7, 2018

SHELL OIL PRODUCTS US - MORMON ISLAND TERMINAL


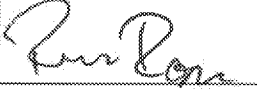
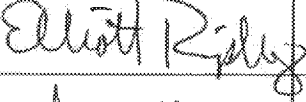
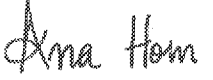
QAPP REVISION HISTORY

Revision No.	Date	Revised By	Reason for Revision	Sections Revised
1.0	3/19/2018	Ana Horn, QISP WGR Southwest, Inc	Initial QAPP DRAFT preparation	All
2.0	6/14/2018	Ana Horn, QISP WGR Southwest, Inc	Revised QAPP DRAFT in accordance with Regional Board Comments	Section 6.0, 6.1, 11.2, 12.5, 14.0, 15.0, 16.0, Table 6.1, 10.0, Appendix A, Appendix B and Appendix C
3.0	8/29/2018	Ana Horn, QISP WGR Southwest, Inc.	Revised QAPP in accordance with approved public comments; format changes to plan	Section 11.1, 11.3, Field Collection Data Sheet

Group A Elements: Project Management

1.0 Title and Approval Sheet

Quality Assurance Project Plan approvals:

Name	Title	Signature	Date
Sandeep Sharma	Facilities Manager		9/10/18
Rick Roper	Terminal Manager		9/6/18
Elliott Ripley	Environmental Advisor		9/6/18
Ana Horn	Environmental Compliance Technician WGR Southwest Inc.		9/6/18

SHELL OIL PRODUCTS US – MORMON ISLAND TERMINAL

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Table 6.1	<u>Monitoring Requirements</u>
Table 10.0	<u>Sample Stations</u>

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Appendix A	<u>Sample Containers and Holding Conditions</u>
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Appendix C	<u>Harbor Toxics TMDL Targets</u>
Appendix D	<u>Chain of Custody</u>
Appendix E	<u>Field Monitoring Forms</u>
Appendix F	<u>Surface Water Ambient Monitoring Program (SWAMP) Collection of Water and Bed Sediment Samples</u>
Appendix G	<u>State Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality (SQO – Part 1)</u>
Appendix H	<u>Attachment A to Resolution No. R11-008</u>

3.0 Distribution List

Copy No.	Distribution Location
1	Mormon Island Terminal – Shell Oil Products US
2	Western Region Central Environmental File – Carson Terminal
3	Carson Terminal Operations Building
4	WGR Southwest Inc. – Los Alamitos Office
5	Qualified Sampling Contractor

4.0 Project / Task Organization

As required by National Pollutant Discharge Elimination System (NPDES) No. CA0064637, Order R4-2017-0039, Shell Oil Products US, Mormon Island Terminal has developed a Quality Assurance Project Plan (QAPP) to support the terminal's Monitoring and Reporting Plan (MRP) for the Harbor Toxics TMDL Monitoring Program. The QAPP outlines monitoring and sampling methods, standard analytical procedures, laboratory certification requirements and quality assurance / quality control protocols. The QAPP consists of the following key elements:

1. Program Management;
2. Field sampling data quality objectives;
3. Laboratory quality objectives; and
4. Data review, verification and validation.

The goal of this QAPP is to ensure high quality data collection that allows for comparability to accurately define the existing conditions of the terminal's receiving water.

4.1 Involved Parties and Roles

Terminal officials, and qualified trained contractors undertake a collaborative approach to implement all aspects of this QAPP. The following outlines the involved parties, their tasks and responsibilities in implementing this program.

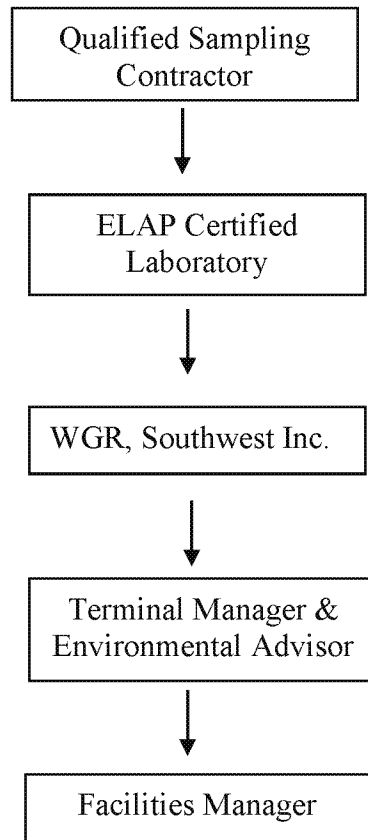
- Sandeep Sharma is the facilities manager who reviews and certifies all associated reports required to be submitted to the Los Angeles Regional Water Quality Control Board (LARWQCB) for the Harbor Toxics TMDL monitoring program. The facilities manager will not participate in the day to day execution of the program.
- Rick Roper is the terminal manager in charge of overseeing the storm water program implementation at the terminal and approving facility effluent discharges to the NPDES outfall. The terminal manager reviews field sampling activities, including sampling protocols followed by the designated sampling contractors, to ensure all sampling procedures comply with the

terminal's QAPP. The terminal manager may stop all actions if there are significant deviations from required practices, or if there is evidence of systemic failure.

- Elliott Ripley is the environmental advisor that provides assistance to the terminal manager and terminal personnel for storm water compliance issues, including evaluating analytical test results, assisting the terminal manager with discharge decisions, reviewing reports, plans and other related documentation. In conjunction with the terminal manager, the environmental advisor is in charge of reviewing quality assurance and quality control procedures found in this QAPP as part of the program's design and supervision. The environmental advisor shall work together with the terminal manager to ensure that the program complies with the terminal's QAPP.
- WGR Southwest Inc. is the terminal's environmental consultant that assists with reporting, plan preparation and provides technical assistance to terminal personnel for storm water compliance issues. The environmental consultant is responsible for managing changes and updates to the terminal's QAPP after a review of gathered data is assessed and all involved parties meet to discuss findings, deficiencies and any necessary changes applicable to the plan. Additionally, the environmental consultant is responsible for compiling field observations and analytical data from laboratories into a database, reviewing of the data for completeness and consistency.
- A select contractor shall be assigned to conduct field sampling for the terminal's TMDL program. The contracted samplers shall be required to assign a designated supervisor to provide monitoring oversight in the field, provide progress reports to terminal management and ensure all field sampling equipment is properly maintained. Contracted samplers are responsible for sample collection; handling and transport; and, field data transmittal to responsible parties.
- Contracted laboratories are responsible for delivering sample confirmation receipt notifications to terminal management, performing the required analytical methods, following documentation, custody and sample logbook procedures, meeting all reporting QA / QC requirements, delivering electronic data files to terminal management and meeting turnaround times for required analyses.

4.2 Project Organizational Chart

The terminal's MRP and QAPP shall be distributed to involved parties including the Terminal Manager, Environmental Advisor, Environmental Consultant and Sampling Contractor. The sampling contractor is responsible for collecting samples and following the corresponding procedures outlined in the terminal's QAPP. Samples shall be submitted to a certified laboratory. Analytical results shall then be distributed to the Terminal Manager, Environmental Advisor and Environmental Consultant for review to account for any deficiencies, if any. Based on the information gathered, a monitoring report shall be generated and given to the Facility Manager for review and sign off to submit to the corresponding agency. The organizational chart below provides a summary of this pathway of information below:



5.0 Problem Statement / Background

The Clean Water Act Section 303(d) identifies impaired waterbodies for which effluent limitations are not meeting water quality standards. Water quality standards include the designated beneficial uses of a waterbody, the adopted water quality objectives to protect those uses, and the State's Antidegradation Policy. The 303(d) list identifies the Greater Los Angeles Harbor as an impaired water body that fails to fully support its designated beneficial uses. The Los Angeles Harbor contains pollutant impairments for a variety of toxic pollutants, including metals, organic compounds and sediment toxicity; these impairments exist in the water column, sediment and/or fish tissue.

To protect and restore fish tissue, water and sediment quality, Total Maximum Daily Loads (TMDLs) for the Los Angeles Harbor have been designed to limit the amount of pollutants entering harbor waters. Target loads are specified in the TMDL program with the intent to determine the quantity of contaminants a system can assimilate while protecting water quality. Additionally, the TMDL strives to identify contaminant source inputs and linkages of inputs to impairments and allocate reductions to each pollutant source to achieve compliance with established targets for the restoration and protection of harbor waters.

Shell Mormon Island Terminal is an individual industrial permittee allowed to discharge storm water into the Los Angeles Inner Harbor under NPDES Permit No. CA0064637, Order No. R4-2017-0039. As such, the terminal is required to develop a TMDL monitoring program to assess and characterize the pollutants present in the terminal's receiving water.

6.0 Project Task Description

Data gained from water column, sediment and fish tissue samples in the LA Harbor shall be reported to the LARWQCB at the end of each monitoring year.

In addition, the terminal shall utilize the analytical data to identify areas where waste load and/or load allocations are not being met, including identifying stressors and evaluating appropriate targets. Sampling shall occur at monitoring stations 02 – 07 as described in the Table 4.1 of the MRP and depicted in Figure 3. The information gathered from the terminal's TMDL monitoring program may be used by regulatory agencies to identify management actions that can be implemented to reduce sources and improve water quality as well as to plan for future monitoring needs and regulatory actions.

Monitoring shall include obtaining samples using Surface Water Ambient Monitoring Program (SWAMP) protocols and following the Sediment Quality Objectives (SQO) - Part 1 guidelines. Samples shall be collected by a qualified contractor specialized in sample field collection. Eurofins laboratory shall be used as the contract laboratory for analysis required under the Harbor Toxics TMDL Program. Eurofins laboratory is an accredited laboratory with Environmental Laboratory Accreditation Program (ELAP) ID 2944. Eurofins shall subcontract to laboratories certified in accordance with the provision of Water Code Section 13176. ELAP certified analytical laboratories shall incorporate the corresponding QA/QC data to the analytical laboratory report. Pollutants must be analyzed using the analytical methods prescribed in 40 Code of Federal Regulations (CFR) 136.

6.1 Implementation Schedule

Implementation of the terminal's MRP and QAPP shall begin from the first discharge from the terminal through the permitted NPDES outfall. Receiving water column sampling (including water samples and TSS samples) shall begin during or as soon as possible following the first effluent discharge event. Sediment and fish tissue monitoring must begin within the year of the first effluent discharge event. *If no discharge occurs, no Harbor monitoring shall be conducted and implementation of the terminal's QAPP is not required.*

Monitoring shall include obtaining grab samples and collecting water column measurements at each monitoring location. To assess temperature, dissolved oxygen, pH and salinity, an appropriate calibrated instrument shall be used by trained sampling personnel.

Table 6.1 summarizes water column, sediment and fish tissue requirements. Refer to Figure 3 for the terminal's monitoring stations.

Table 6.1 – Monitoring Requirements		
Medium	Monitored Constituents	Frequency
Water Column / TSS	Flow, Temperature, Dissolved Oxygen, pH, Salinity, TSS, Copper, Lead, Zinc, PCBs, and DDT	3 Times / Year during: Two wet weather events ¹ & One dry weather event
Sediment	Sediment Chemistry, Two Sediment Toxicity Tests, and Four Benthic Indices	Every 5 Years ²
Fish Tissue	Chlordane, Dieldrin, Toxaphene, DDT and PCBs	Every 2 Years

1 – The first large storm event of the season, once Harbor monitoring is triggered by a discharge from the facility, shall be included as one of the wet weather monitoring events. If no discharge occurs from the facility, implementation of the MRP and QAPP are not required.

2 – Sediment triad sampling shall be conducted every five years (starting from the year of the first effluent discharge event and every five years subsequently). Sediment chemistry shall include the constituents listed in Attachment A of the SQO-Part 1. Sediment triad sampling and sediment chemistry sampling shall occur at Station 04 and Station 06 only.

All field sampling and measurements shall be conducted as outlined in the SWAMP Standard Operating Procedure for the *Collection of Water and Bed Sediment Samples with Associated Field Measurements and Physical Habitat in California* ([Appendix F](#)) and SQO-Part 1 ([Appendix G](#)) sediment sampling procedures. Additional details about sample collection, handling and laboratory procedures are provided in QAPP, [Section 12](#).

6.2 Deliverables

The terminal's proposed MRP and QAPP plans are the first deliverables to the LARWQCB. Once approved and monitoring is initiated, monitoring reports shall be submitted to the LARWQCB annually. The first report is due 15 months after monitoring begins, and subsequent reports shall be submitted annually thereafter. If there is no discharge triggering the implementation of the facility's MRP and QAPP, no discharge shall be specified in the Annual Report.

Annual monitoring reports shall include a description of monitoring activities conducted for the monitoring year, a summary of water, sediment and tissue analytical results, summary of any deviations from the proposed sampling program and associated QA/QC issues, and any associated action/response activities. Annual monitoring reports shall provide a statement assessing whether or not monitoring results indicate compliance or non-compliance with waste load and load allocations.

7.0 Quality Objectives and Criteria for Data Measurement

Data acquisition activities shall include both field measurements and laboratory analyses. The following indicators shall be used to assess data quality: accuracy, precision, representativeness, comparability and completeness. These indicators and data quality objectives shall be used to determine the level of error considered to be acceptable in the data produced by the sampling program. The following provides a brief discussion of the objectives for the indicators used in this monitoring program.

7.1 Accuracy (Bias)

Accuracy is a measurement of how closely analytical results correspond to a “true” or accepted value. To achieve accuracy in measurements of pH, dissolved oxygen, salinity, and temperature, the corresponding measurement device shall be calibrated before each sampling event. Additionally, the laboratory is to address accuracy during sample analysis by evaluating the percent recovery of surrogates, laboratory control samples (LCS) and / or matrix spikes (MS).

7.2 Precision

Precision is a measurement of how closely analytical results can be duplicated. Precision is addressed by the collection and analysis of replicate samples. Additionally, the laboratory duplicates shall be analyzed to assess laboratory precision, which is reported as a standard deviation or relative percent difference (RPD).

7.3 Representativeness

Representativeness describes the degree to which the results of analyses represents the samples collected and the samples representation of the environment from which they are taken. Determining appropriate sample locations, utilizing approved documents and standard operating procedures and analytical methods shall ensure that field conditions are represented as best as possible. It is important to note that because site conditions may be affected by flow, tidal cycles, weather conditions, etc. field observations and conditions shall be noted during each sampling event.

7.4 Comparability

Comparability is the similarity of data from different sources. To appropriately compare data from multiple sampling events, standard methods of sample handling and analysis must be used. Maintaining consistency in the standard methods used eliminates variables that might result in unusable data.

7.5 Completeness

Completeness is the percentage data available for use compared to the potential amount of data identified in the monitoring plan. Ideally, 100% of the data should be available, however, possibilities exist for issues to arise that may result in incomplete data sets. These include unexpected field conditions, laboratory error, and shipment complications that result in unacceptable sample preservation conditions. To minimize data loss, terminal management shall review all collection protocols and field measurements and implement corrective actions, if needed.

8.0 Special Training / Certification

Sampling personnel shall have prior experience and training in the type of water quality monitoring proposed for this program. The designated contract sampling supervisor shall ensure personnel are trained and familiar with the terminal's MRP and QAPP.

Contracted laboratories must be certified by the State of California, Environmental Laboratory Accreditations Program (ELAP) in accordance with provision of Water Code Section 13176. The assigned laboratory shall have their own QA/QC program in place to ensure requisite knowledge and skills are in place for the proper execution of the analytical methods being requested.

Involved parties responsible for implementation of this QAPP shall ensure all necessary standard operating procedures are followed for the duration of the program. All involved parties must completely understand the QAPP and retain an up to date copy for reference.

9.0 Documentation and Records

Records of all monitoring information, including calibration and maintenance records, copies of all reports and records of all data shall be maintained for a minimum of three (3) years.

All field measurements shall be recorded at the time of completion using standard field data sheets. The data sheets shall be reviewed at each monitoring station to ensure all information required is complete. If data is missing an explanation must be recorded documenting the reason for incompleteness. The following information shall be recorded at each monitoring station:

- Monitoring station ID / location
- The date and time of sample collection
- Name of individuals collecting the samples
- Field observations / site conditions
- GPS coordinates
- Field measurements
- Number and types of samples collected
- Additional information that may affect the integrity of the samples

Laboratory personnel are responsible for documenting all analyses performed. Reporting shall include:

- The date(s) analyses were performed;
- The analytical techniques or methods used;
- The results of such analysis;
- Names of the personnel who performed the analysis;
- Final laboratory analytical reports;

- Analytical and extraction methods;
- Summary of QA/QC data, including matrix spikes, laboratory control samples, duplicate analyses, blanks, blank spikes, percent recovery of surrogates, etc. (Level 2 QA/QC); and,
- A perjury statement executed by the person responsible for the laboratory.

Analytical results received from the laboratory shall be reported to the LARWQCB. An annual report on the findings of the monitoring program shall be developed and submitted at the end of the monitoring year.

All the information above shall be reviewed by qualified personnel to ensure that proper analytical methods and procedures were followed. The information shall be reviewed, specifically, to determine if the samples were analyzed using the proper analytical methods and within the appropriate holding times, and if the QA/QC data is within allowable limits set by the laboratory. All QA/QC items must be run on the same dates the samples were actually analyzed. Unless otherwise specified in the analytical method, duplicate samples and spike samples must be analyzed at a frequency of 5% (1 in 20 samples) with at least one if there are fewer than 20 samples in a batch.

Each sample result must specify the applicable reporting limit (RL) and the Method Detection Limit (MDL) for each parameter, as determined by the procedure in 40 CFR Part 136. If there are any discrepancies in the laboratory data, the laboratory shall be contacted to discuss the discrepancies. An explanation for the discrepancies should be included in the annual report. In addition, the QAPP shall be reviewed and revised annually based on the results and execution of the program during the reporting year. Revisions shall be made by the terminal's environmental consultant and the changes shall be reviewed and approved by the terminal manager and the environmental advisor. An updated copy of the plan shall be redistributed to the parties involved in the execution of the QAPP.

Group B: Data Generation and Acquisition

10.0 Sampling Process Design

The monitoring station locations for water, sediment and fish tissue samples are summarized in Table 10.0. A total of 6 stations are included in the compliance monitoring program. All monitoring stations were selected based on the locations specified in Attachment A to Resolution No. R11-008 (Appendix H). Samples shall be collected by designated specialized contractors that have the required equipment and tools to properly collect and process the required samples. Sampling efforts shall include gathering data of onsite conditions, water quality measurements and obtaining grab samples to be analyzed for the required parameters.

Samples shall be collected in clean sample containers that are made of appropriate materials, have adequate volume, and contain the correct preservative required for analysis as provided by the laboratory. Appendix D provides the Chain of Custody (COC) for water column, sediment and fish tissue analyses.

Table 10.0 – Sample Stations				
Water Body Name	Station ID	Station	Station Location	Sample Media and Parameters¹
Los Angeles Inner Harbor	02	East Turning Basin	33 ° 45'45.55" N 118 15'19.82" W	Water Column / TSS: Flow, Temperature, Dissolved Oxygen, pH, Salinity, TSS, Copper, Lead, Zinc, PCBs, DDT
	03	Center of the POLA West Basin	33 ° 45'50.59" N 118 ° 16'28.47" W	
	05	Between Pier 300 and 400	33 ° 43'53.75" N 118 ° 15'13.83" W	
	04	Main Turning Basin North of Vincent Thomas Bridge	33 ° 45'02.77" N 118 ° 16'15.41" W	Water Column / TSS: Flow, Temperature, Dissolved Oxygen, pH, Salinity, TSS, Copper, Lead, Zinc, PCBs, DDT
	06	Main Channel South of Port O' Call	33 ° 43'35.51" N 118 ° 16'17.97" W	Sediment³: Sediment Chemistry, Sediment Toxicity, Benthic Community Effect
	07	Fish Tissue Sampling Station ²	33 ° 45'14.95" N 118 ° 16'07.77" W	Fish Tissue: Chlordane, Dieldrin Toxaphene, DDT and PCBs

1 – Sampling shall be designed to collect sufficient volumes of suspended solids to allow for analysis of the listed pollutants in the bulk sediment.

2 – Fish tissue sampling locations is subject to change depending on harbor conditions.

3 – Sediment bed samples shall only be collected at Station 04 and 06. Sediment chemistry samples shall be analyzed for the full chemical suite as included in Attachment A of the SQO-Part 1.

In the event a sampling site becomes inaccessible, documentation shall be maintained for that particular sampling location noting the conditions hindering access to the location. Samples shall be targeted for collection 24 hours after a storm event to allow for runoff to reach the receiving waters and to improve the likelihood of sampling in less dangerous conditions than those present at the start of a storm.

11.0 Sampling Methods

The following protocols describe the techniques to be used to collect field samples in a way that neither contaminates, loses or changes the chemical form of the analytes of interest. All samples shall be collected using boats equipped with specialized equipment as provided by the contracted sampling company. Samples shall be collected in areas where the vessel does not interfere with the water being collected. The procedures for collecting field samples shall follow the SWAMP standard operating procedure for *Collection of Water and Bed Sediment Samples with Associated Field Measurements and Physical Habitat in California* ([Appendix F](#)) and the SQO – Part 1 ([Appendix G](#)) sediment sampling procedures.

11.1 Water Column and TSS Sample Collection

Water quality monitoring shall consist of field measurements and the collection of water samples for chemical analyses. All field instruments shall be calibrated per manufacturer's instructions. Calibrations shall be documented and maintained on file. Each instrument used to collect field measurements must be allowed to completely equilibrate before recording measurements.

Water column samples shall be collected from the surface and analyzed for the required metals, PCBs and DDT constituents. For each sampling event and at each monitoring location pH, temperature, dissolved oxygen, salinity and flow shall be measured at each site using the appropriate field equipment. Field measurements, including water depth, shall be recorded on a field datasheet. TSS samples shall be collected at different depths (surface, mid-water column and bottom) within the water column during two wet weather events and one dry weather event. Surface samples are defined as samples collected between 0 and 1 meter. Mid water column samples are defined as samples collected at 50% of the total depth of the sampling location. The overall water depth shall be determined in the field during the time of sampling to account for changes in depth of the water column that may results from uncontrollable factors, such as tidal patterns, seasonal fluctuations, input from precipitation / loss from evaporation, etc. Bottom sample depths are those samples collected within 1 meter above the harbor bed.

Collected samples must be sufficient to allow for analysis of the pollutants in the bulk sediment. Proper gloves must be worn to prevent contamination of the samples and to protect the sampler from environmental hazards. A manual containing the standard operating procedures for all field analyses, including records of instrument calibration and maintenance, and quality control procedures shall be maintained on site. Refer to [Appendix F](#) for detailed SWAMP sampling protocols.

11.2 Sediment Sample Collection

Assessment of sediment quality shall consist of measuring and integrating data gathered from three lines of evidence (LOE), as specified in the SQO – Part 1, including sediment chemistry analysis, sediment toxicity and benthic community condition.

Sediment samples shall be collected at Stations 02 – 06 with the use of a mechanical sediment Van Veen grab sampler. The grab sampler must be slowly lowered to the bottom with minimum substrate disturbance. Surface sediment shall be obtained within the upper 5 cm for chemistry and toxicity analyses. Benthic samples shall be screened through a 1.0 mm

mesh and the entire contents of the grab sample, with a minimum penetration depth of 5 cm, shall be collected for benthic community analyses. Once sediment has been collected, the grab sampler shall be retrieved at a moderate speed.

Upon retrieval, the grab sample must be examined to ensure that the sediment surface is undisturbed and that the grab sample is not subject for rejection. The sample must be rejected if the following are not met:

- Mud surface must not be pressing out of the top of the sampler
- Water must not be leaking out along the sides of the sediment in the grab sampler (this ensures the surface sediment is not washed out)
- Sediment surface must be flat and level in the sampler (if it is not level, the grab tilted over before closing).

The sediment sampler must be cleaned prior to sampling EACH monitoring station, and processing of the sediment sample must be performed with reference to SWAMP protocols.

11.3 Fish Tissue Sample Collection

Fish tissue monitoring shall be conducted in the Los Angeles Harbor in the proposed location specified in Table 10.0. Three different fish species shall be collected, including a white croaker, a sport fish and a prey fish. The selection of the sport fish and prey fish is contingent upon the following considerations:

Sport Fish Selection

- The sport fish selected should be one fished in the harbor;
- The sport fish should have a fish consumption advisory or the sport fish should demonstrate elevated concentrations of PCBs and DDT within its tissue;³ and
- The sport fish must be abundant in the water bodies of interest.

Prey Fish Selection

- The prey fish must be a prey species of the white croaker and the sport fish selected for monitoring. The size of the prey fish must be taken into consideration.
- The prey fish must have a fish consumption advisory or should have elevated concentrations of PCBs and DDT within its tissue.³
- The prey fish must be abundant in the water bodies of interest.

Based on the development of the TMDL for Harbor waters, the California Halibut (*Paralichthys californicus*) and Shiner Surfperch (*Cymatogaster aggregate*) are the most common fish species that fulfill the required specifications noted above. However, if the selected fish species are unavailable during a sampling event, other fish species that fulfill the requirements above may be selected. Fish tissue samples collected shall be prepared with the most common preparation for the selected fish species.

In general, fillet muscle tissue with the skin off will be used for analysis. Processing and preservation will be performed following USEPA guidance⁴ and/or Bioaccumulation

³ For fish consumption advisories refer to the Environmental Health Hazard Assessment (OEHHHA) website: <https://oehha.ca.gov/>

⁴ USEPA 2000. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories: Volume 1, Fish Sampling and Analysis. US Environmental Protection Agency. Office of Water. Washington DC.

Oversight Group⁵ (BOG) protocols. Dissection and compositing methods will be performed in the analytical laboratory. Fish collected shall be visually observed, measured, wrapped in aluminum foil and placed in a waterproof plastic bag that is labeled or tagged appropriately. Packaged individual specimens in a composite sample should be kept together, if possible. Once packaged, samples should be cooled on ice immediately.

Every effort shall be taken to ensure that any sampling technique occurs within the proposed target sampling areas. Numerous factors such as wind, currents, and presence or absence of targeted fish species may require the collection of fish outside the boundaries of the target monitoring station locations. All available resources shall be used if insufficient fish have been caught at target locations. Fish finders or echo sounders can be used to find alternative sampling locations that is as close as practicable to the original monitoring station and still within the waterbodies specified in the Harbor Toxics TMDL. Reasons for relocation and/or any other observations must be noted in the field log.

11.4 Corrective Actions

If problems arise during sampling events, samplers shall document the deficiencies and report to the assigned supervisor. The supervisor shall then be communicated with terminal officials to implement corrective actions and avoid future occurrences.

⁵ The Bioaccumulation Oversight Group (BOG) is a subcommittee of the SWAMP Roundtable that provides oversight of SWAMP's state-wide bioaccumulation monitoring program.

12.0 Sample Handling, Preservation and Custody

12.1 Sample Collection and Initial Preservation

Sample collection includes all stages of sampling directly connected with capturing the sample, assuring that the sample is a true representation of the medium and preventing cross contamination. The following sections describe sample handling procedures to be followed throughout this program.

12.2 Sample Labels

Each sample must be labeled with labels provided by the laboratory and contain the following information:

- Facility Name:
- Monitoring Station / Location
- Initials of Sampling Personnel
- Date and time of collection
- Preservative present in container (i.e. hydrochloric acid “HCl”)
- Analysis to be performed

12.3 Sample Log / Sample Collection Information

General sampling information is recorded on the Chain of Custody at the time of sampling in sufficient detail so that such information can be readily available.

- Facility Name:
- Sample Point Location Name:
- Signature and Printed Name of Person Responsible for Sampling
- Sample ID
- Sample Date/Time

Sample collection information is available on the Chain of Custody.

12.4 Chain of Custody Procedures

The chain of custody form documents sample possession from the time of collection until the sample is analyzed. It also serves as a sample inventory and an analysis order form. Once the chain of custody record is received by the laboratory it is checked for accuracy and completeness. Information for each sample including the sample number, date of sampling, time of sampling, the sample matrix, and the required analyses, is entered on the form. The form should be filled out with a waterproof pen after the samples are labeled and ready for shipment. To keep it dry, the chain of custody record should be placed in a sealed plastic bag and sent to the laboratory inside the sample cooler. Facility personnel are responsible for retaining a copy of the original chain of custody.

12.5 Analytical Information

The facility personnel or an authorized contractor must properly collect, pack and document the sample collection utilizing applicable methods and procedures. Once the samples have been collected and prepared for shipment to the laboratory, the authorized and qualified sampling contractor shall contact the appropriate laboratories for sample pickup or coordinate sample drop off to the laboratory. Samples must be transported to the laboratory as soon as possible, but no more than **24 hours** after sample collection to avoid exceeding any holding times.

Sample containers and holding conditions for the required constituents required under this monitoring program are provided in Appendix A. A list of analytical methods, reporting limits and method detection levels of the laboratory analyses for each medium are included in Appendix B and the corresponding target concentration for these parameters as included in Attachment A to Resolution No. R11-008 are included in Appendix C.

13.0 Analytical Methods

This section describes the management of the samples after collection. Included in this section are sample preservation techniques, sample storage, descriptions of the analyses and parameters to be analyzed, the appropriate analytical methods to be used, required documentation, and the proper quality assurance/quality control (QA/QC) procedures to follow.

13.1 Analytical Methodology

The analytical methods for all analyses are listed in Appendix B. Unless otherwise specified in the analytical method, duplicate samples and spike samples must be analyzed at a frequency of 5% (1 in 20 samples) with at least one if there are fewer than 20 samples in a batch. A batch is defined as a single analytical run encompassing no more than 24 hours from start to finish.

13.2 Sample Preservation and Storage

Sample preservation is dependent on the specific analyses that are to be performed. Each sample is to be collected in sample containers provided by the laboratory. The required analyses call for different preservation techniques. The laboratory provides the proper containers with the appropriate preservatives already added to the containers. Field measurement of pH, temperature, dissolved oxygen, and flow may be field-tested by the sampler, using the appropriate instrumentation. A summary of preservation techniques is included in Appendix A, including required sample bottles and holding times.

Sample storage is an integral part of the sample preservation. The samples are to be stored until they are transported to the laboratory at a temperature of 4 degrees Celsius either in a refrigerator or on ice in a cooler. A summary of storage temperatures is also included in Appendix A.

14.0 Quality Control

To ensure high quality data, all parties involved in executing the terminal's QAPP shall adhere to the standard operating procedures and methods as specified in this plan. Field and laboratory data generated during this TMDL monitoring program shall be reviewed using the data quality objectives described in Section 7.0 for the duration of the monitoring program, from the point of collection through laboratory analysis and reporting. Corrective actions shall be implemented when sample collection or analysis deficiencies are identified. Corrective actions involve checking procedures, reviewing documentation and calculations to identify possible errors, and re-analyzing samples, if possible.

The terminal's QA/QC program is designed to ensure that all elements of the QAPP are implemented and that they are implemented by properly trained personnel. Each person who shall perform or supervise sampling and/or perform discharge point inspections (storm and dry season) in accordance with this program must have a working knowledge of this plan, be familiar with the facility's MRP, and be otherwise qualified to carry out the associated tasks. Each of these persons shall receive a copy of this program for their review and shall be trained on the requirements of this monitoring plan and proper sample collection and water quality monitoring practices. All monitoring conducted in compliance with the MRP must be comparable with the Quality Assurance requirements of the Surface Water Ambient Monitoring Program.

15.0 Instrument / Equipment Maintenance and Calibration

Field equipment shall be maintained in accordance with manufacturer specifications. Maintenance shall be provided on an as needed basis. Prior to each sampling event, all instruments required shall be inspected during calibration procedures. All equipment must be tested for appropriate responses prior to analysis. Any deficiencies shall be identified, and corrective actions implemented. All equipment and instruments that may come into contact with sampling media must be properly cleaned prior to each use and between sampling events to prevent cross contamination between samples. The following procedure shall be implemented to ensure the sampling equipment is properly cleaned:

1. Pre-wash rinse of equipment with tap or site water
2. Washing of equipment with warm tap water or site water and specialized soap⁶ solution
3. Rinse using tap or site water
4. Rinse thoroughly with organic free water and place on a clean foil wrapped surface to air dry
5. Store in a clean, closed container for next use

After decontamination, equipment should only be handled by personnel wearing clean gloves to prevent re-contamination. All equipment shall be stored in clean containers away from the decontamination area to prevent re-contamination. When sampling each station, gloves must be worn at all times and shall be discarded after processing each station. Gloves must be replaced prior to handling decontaminated instruments or work surfaces.

Contract laboratories and sampler contractors are responsible for maintaining analytical and sampling equipment in accordance with their standard operating procedures, including those specified by the manufacturer and the analytical methods used. If contractor equipment malfunctions, terminal officials must be notified, and data is not to be collected or analyzed using the deficient instrument. All problems and corrective actions must be recorded by the contract laboratory and samplers. Terminal officials must address any problems identified during sampling events and update the QAPP accordingly.

16.0 Data Management

Involved parties responsible for the implementation of this QAPP are to maintain all data records, including field generated data and laboratory data. Results obtained during this monitoring program must be reported in the annual monitoring report to be submitted to the LARWQCB. All receiving water monitoring data shall also be submitted in accordance with the California Environmental Data Exchange Network (CEDEN). Receiving water monitoring data shall be submitted in accordance with CEDEN, when feasible.

⁶ Specialized soap used for washing equipment shall consist of detergent ideal for cleaning contaminants from glassware, metals, and plastic equipment, such as AlconoxTM soap.

Group C Elements: Assessment and Oversight

17.0 Assessment and Response Actions

During sample collection events, samplers must review the appropriate standard operating procedures before going out to the sites to collect samples to ensure all methods are understood and the necessary equipment and supplies are ready for use. All measurements obtained in the field and all collected samples shall be visually evaluated to ensure all information required in the field data sheets is gathered prior to leaving a monitoring station. If issues are identified, the terminal manager shall be notified, and appropriate actions shall be taken. Documentation of any deficiencies is to be recorded and maintained on site. Deficiencies must be noted in the Annual Report submitted to the LARWQCB.

Group D Elements: Data Validation and Usability

18.0 Data Validation and Usability

This section addresses the quality assurance activities that occur following the completion of sampling activities, including data review, verification and validation. Data generated for this monitoring program shall be reviewed against the data quality objectives specified in this QAPP. Field, laboratory and terminal personnel shall be responsible for reviewing the data and verifying that sample collection, handling and analysis procedures were in accordance with the methods specified in this plan and its attached sampling protocols found in [Appendix F](#) and [Appendix G](#).

Data verification and validation for sample collection and handling activities shall consist of the following tasks:

- Verification that the sampling activities were performed in accordance with QAPP requirements;
- Documentation of any field changes or discrepancies;
- Verification that the field activities were properly documented;
- Verification of proper completion of sample labels and secure storage of samples; and
- Verification that all samples recorded in the field log were received by the laboratory.

Data verification and validation for the sample analysis activities shall consists of the following tasks:

- Appropriate methodology has been followed;
- Instrument calibrations are correct;
- QC samples meet performance criteria;
- Analytical results are complete and correct; and
- Documentation is complete.

Analytical laboratory result copies shall be emailed to all involved parties responsible for implementation of the QAPP. Sample results shall be evaluated immediately upon receipt by the terminal officials and the environmental consultant.

19.0 Reconciliation with User Requirements

The data quality shall be evaluated according to this document, with respect to sampling design, sampling method, field and laboratory analyses, quality control and maintenance. By properly following the guidelines in this document and documents referenced the data quality shall be validated. If samples or procedures used in this study fail to meet the guidelines listed in this document, the data shall be flagged and reported to the terminal manager and associated parties responsible for the implementation of this QAPP. Any flagged data shall be carefully scrutinized to determine areas of improvement that shall improve data quality and usability.

FIGURE 1:

VICINITY TOPOGRAPHIC MAP